

CLAIMS:

1. A saddle clamp for mounting on a bone with curved surface in a bone fixing or spinal fusion operation, for carrying a bone-fixing member, said saddle clamp having a rigid body with at least two holes for passing fixing elements to be tightened to said bone and at least one assembly element integral with said body for attaching said bone-fixing member, said rigid body having a contact surface configured to have at least three points of contact with said curved surface of the bone when said saddle clamp is mounted thereon, at least two of said holes passing through said contact surface at least adjacent to two of said 5 three points of contact so as to provide, upon tightening of said fixing elements, at least three spaced apart, non-collinear areas of contact and thereby firm attachment of said clamp to said bone.
- 10 2. The saddle clamp of Claim 1, wherein axes of at least two of said holes converge towards said bone.
- 15 3. The saddle clamp of Claim 1, wherein said assembly element is a threaded pin protruding from said rigid body.
4. The saddle clamp of Claim 1, wherein said assembly element is a threaded nut built into said rigid body.
5. The saddle clamp of Claim 1, for mounting on a vertebra in a spinal 20 fusion operation, the vertebra having at one side thereof a pedicle, a superior facet with an edge, and a transverse process, wherein said contact surface of the rigid body comprises a saddle surface adapted to straddle the top of the pedicle between the transverse process and the superior facet when said saddle clamp is mounted, and a second surface adapted to contact simultaneously said superior 25 facet, a first of said passing holes being obtained through said saddle surface and a second of said passing holes being obtained through said second surface.
6. The saddle clamp of Claim 5, wherein said second surface is an arcuate surface adapted to receive said edge of the superior facet.

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7. The saddle clamp of Claim 6, wherein said first and second passing holes are positioned such that, when said saddle clamp is mounted, an axis of the first passing hole is directed into the pedicle and an axis of the second passing hole is directed into said edge and is convergent with the axis of the first passing hole.
- 5 8. The saddle clamp of Claim 1, for mounting on a tubular bone, wherein said contact surface is of arcuate shape and axes of said at least two holes are directed perpendicular to bone's axis.
9. The saddle clamp of Claim 8, wherein projections of the holes' axes on a cross-section of said tubular bone intersect at an angle between 45° and 60°.
- 10 10. A method for mounting the saddle clamp of Claim 1 to a bone, said method including:
 - providing said saddle clamp with suitably configured contact surface and holes for said bone;
 - providing fixing elements;
 - 15 - exposing a suitable area of said bone;
 - drilling holes in said bone corresponding to the passing holes, for anchoring said fixing elements; and
 - mounting said saddle clamp on said bone by inserting said fixing elements through the passing holes of said clamp and tightening them in the 20 drilled holes of said bone.
11. The method of Claim 10, wherein said fixing elements are screws and said holes in the bone are pilot holes.
12. The method of Claim 10, wherein said bone is tubular and said holes in the bone have axes perpendicular to the axis of said tubular bone.
- 25 13. The method of Claim 12, wherein projections of said holes' axes on a cross-section of said tubular bone intersect at an angle between 45° and 60°.
14. The method of Claim 10, wherein said bone is a vertebra having a vertebra body and, at one side thereof, a pedicle, a superior facet with an edge, and a transverse process, said method including:

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- providing said saddle clamp where said contact surface of the rigid body comprises a saddle surface adapted to straddle the top of the pedicle between the transverse process and the superior facet, and a second surface adapted to contact simultaneously said superior facet, a first of said passing holes being obtained through said saddle surface and a second of said passing holes being obtained through said second surface;
 - providing fixing elements;
 - drilling pilot holes in said vertebra corresponding to the passing holes, for anchoring said fixing elements, without penetrating further than the body of said pedicle, one pilot hole being drilled in said pedicle and a second pilot hole being drilled in said superior facet; and
 - mounting said clamp on said vertebra by inserting said fixing elements through the passing holes of said clamp and tightening them in the drilled pilot holes of said vertebra, without said fixing elements penetrating said vertebra body.
15. The method of Claim 14, wherein said second surface of the clamp is an arcuate surface adapted to receive said edge of the superior facet, and said second pilot hole is drilled into said edge.
16. The method of Claim 14, further including adjusting the surface of said vertebra to said saddle clamp by cutting portion of said superior facet edge.
17. The method of Claim 14, wherein said fixing elements are screws, or nails, or expanding anchors.
18. The method of Claim 14, wherein a second of said pilot holes is drilled with an axis convergent with the axis of a first pilot hole.